VT1 ECU PROGRAMMER
USER MANUAL

By Athena Evolution

ENGLISH

VT1 User Manual release 02
Release FW 1.2
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Dear customer,

Thank you for choosing a product from **DATA ACQUISITION AND ANALYSIS SYSTEMS** by **GET** by **Athena Evolution** range.
We are confident that our passion and experience will help you to express yourself successfully in all competition. We whish to invite you to read carefully this user manual that will help you on the use of this new **GET** by **Athena Evolution** product.
VT1 permit to visualize and/or change some base parameters stored in linked ECU.
The simply use of this product (**VT1** may need the use of a pc) make the VT1 important and useful during workshop job and during testing and racing.
In this manual ECU means Electronic Control Unit. This is referred to engine injection control unit.

* ECU list is inside this manual.

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1 VT1 KIT

VT1 is supplied with:

- box
- **VT1**
- CD with software and various documents

⚠	DO NOT OPEN THE PRODUCT UNSCREWING THE SCREWS UNDER THE BATTERY COMPARTMENT. THE OPENING WILL BE VISUALIZED WITH THE BREAKING OF INTERNAL SEALS. THIS WILL VOID THE WARRANTY.

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2 MAIN FUNCTIONS AND CARACTERISTICS

- IP64 shock-proof plastic box
- **TPS** (Throttle Position Sensor – butterfly position sensor) adjustment
- Injected fuel quantity modification
- Timing advance modification
- RPM limiter modification
- Cutoff Modification (**CUT OFF TIME**) for electronic gearshift
- AFR and STO Lambda value visualization (only with **LC1 EVO** connected)
- Ideal Lambda adjustment and visualization (**LAMBDA TARGET**) and real time control with measured value
- LED visualization of differences between measured Lambda and **LAMBDA TARGET**
- GPA (Get Power Assistance) ADJUSTMENT
- Internal ECU parameter visualization

GET by **Athena Evolution** have the right to implement new functions.
All information relative to this and other **GET** by **Athena Evolution** products can be found in the following web site: www.getdata.it

3 CORRECT USE

To use properly VT1 you need to follow these instructions:

- Connect VT1 via the proper cable only to compatible ECU (check **chapter 11**)
- It is preferable to connect VT1 while the engine is running (battery less vehicle).
- Plug properly the VT1 connector to the ECU wiring
- If you would like to have additional Lambda information you need to connect **LC1 EVO**

4 WARNING

- If the system locks it could be necessary to remove and reconnect VT1 after few seconds from ECU loom.
- Do not modify the product. Please contact dealer or **GET**.
- Use products only for purposes described in this manual.
- Use only **GET** looms for interconnection.
- Please insulate red and black wires of **VT1** if not used.

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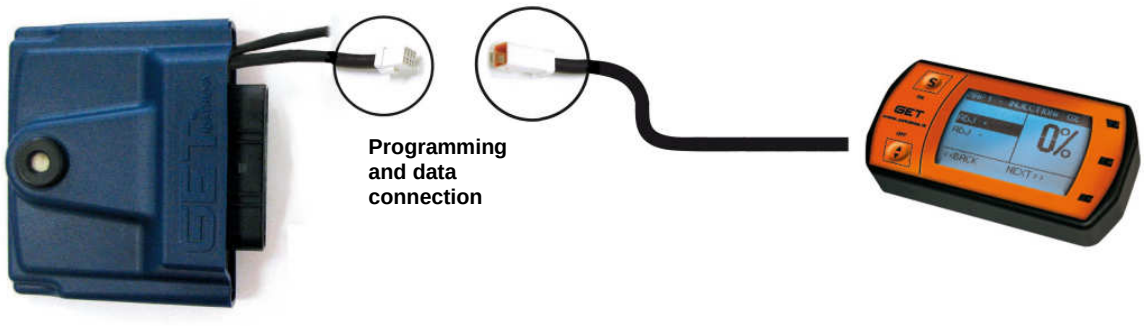
5 VT1 CONNECTION TO ECU

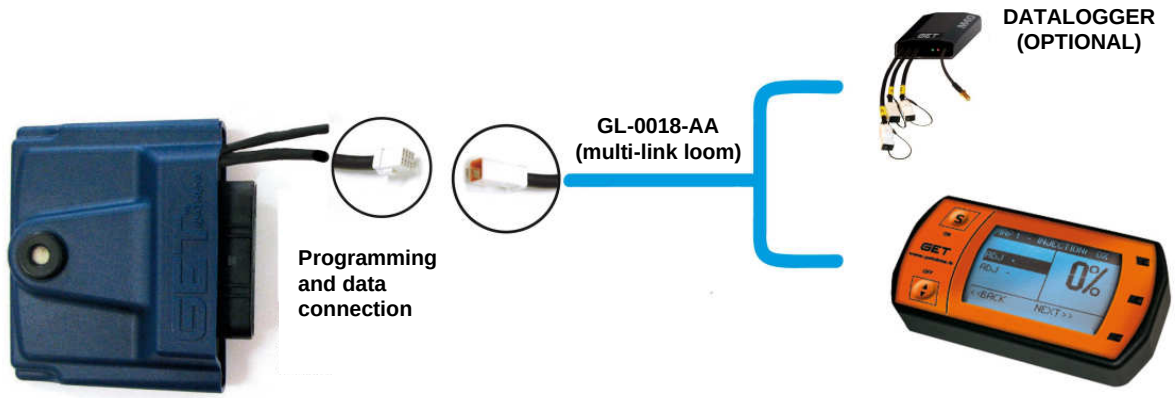
VT1 can be linked to ECU via a specific loom from the rear part of the instrument.
The connection could be done as follow:

- Direct link via the **PROGRAM/DATA** ECU loom



⚠	**WARNING: THIS HARDWARE CONNECTION REQUIRE ELECTRICAL INSULATION FOR RED AND BLACK WIRES TO PREVENT POWER SUPPLY SHORT CIRCUIT**

- Link with **MULTILINK** loom (part number **GL-0018-AA**)



⚠	**WARNING: THIS HARDWARE CONNECTION REQUIRE ELECTRICAL INSULATION FOR RED AND BLACK WIRES TO PREVENT POWER SUPPLY SHORT CIRCUIT**

NOTE: VT1 WILL SWITCH ON AUTOMATICALLY ONCE ECU IS POWERED. THIS OPERATION WILL NEED FEW SECONDS.

All previous connections are available for all vehicles. It is not possible to switch on the system with no battery and with engine **NOT RUNNING**.
For this option, please read next chapter.

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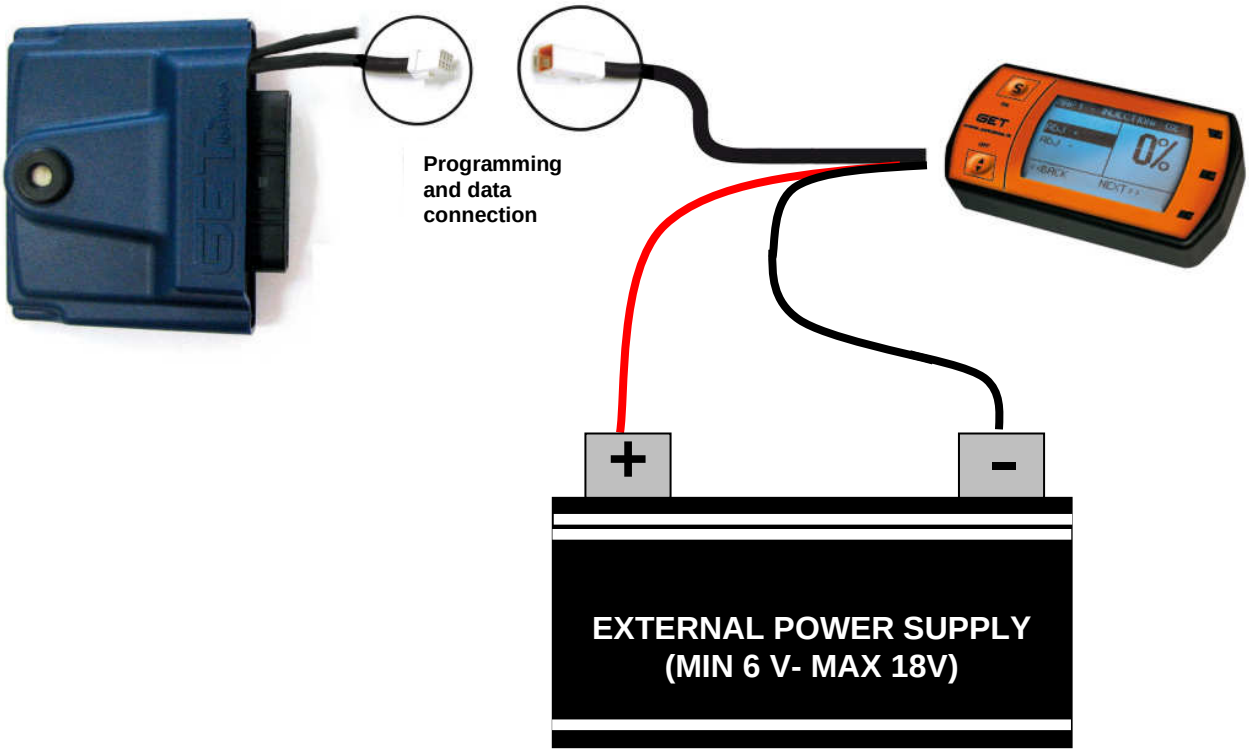
6 BATTERY LESS VEHICLE CONNECTION

If a connection to a battery less vehicle is needed with the engine **NOT RUNNING** it is necessary to use and external power supply.
With the use of red (positive) and black (negative) wires it is possible to switch on the **VT1 + ECU** system (max. 18 VDC).

WARNING: IF AN EXTERNAL POWER SUPPLY IS USED IT IS STRICTLY RECOMMENDED TO DISCONNECT THE FUEL PUMP.
IF THE INJECTOR IS OPEN, THE CILINDER COULD BE FILLED WITH FUEL.



WARNING: USING EXTERNAL POWER SUPPLY AVOID SHORT CIRCUITS

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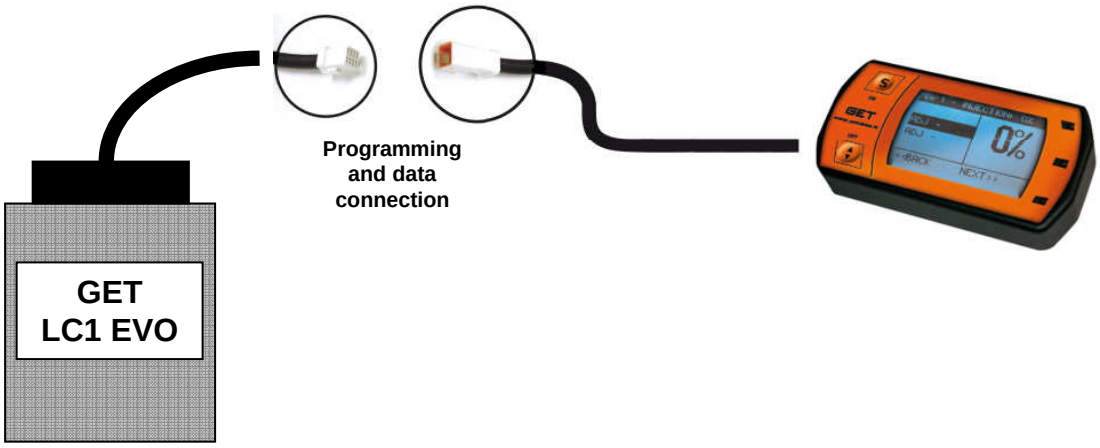
7 VT1 CONNECTION TO LC1 EVO MODULE

If a connection to **LC1 EVO** is needed the Lambda module have to supplied.

VT1 can be linked to **LC1 EVO** via a specific loom (sold separately)



	WARNING : LC1 EVO MODULE HAVE TO BE POWERED BEFORE CONNECTING TO VT1

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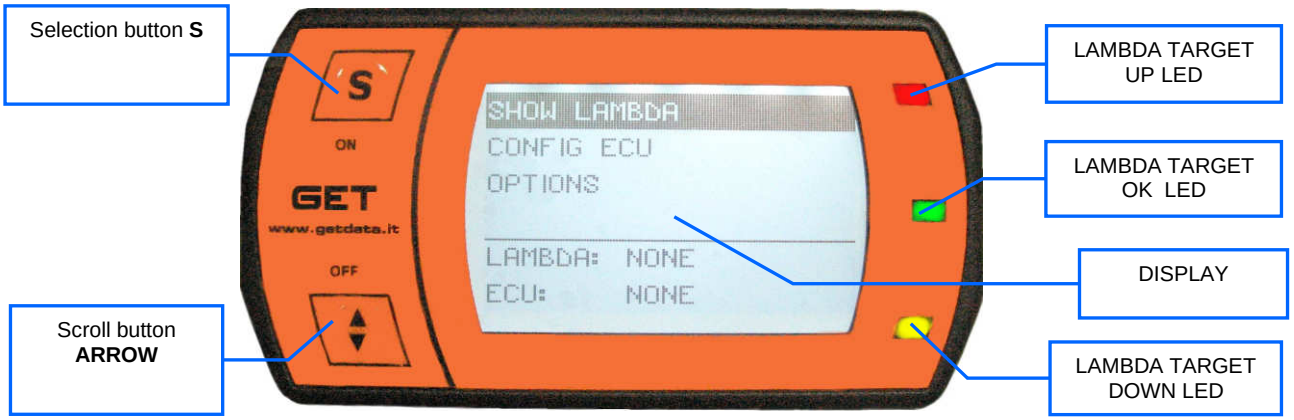
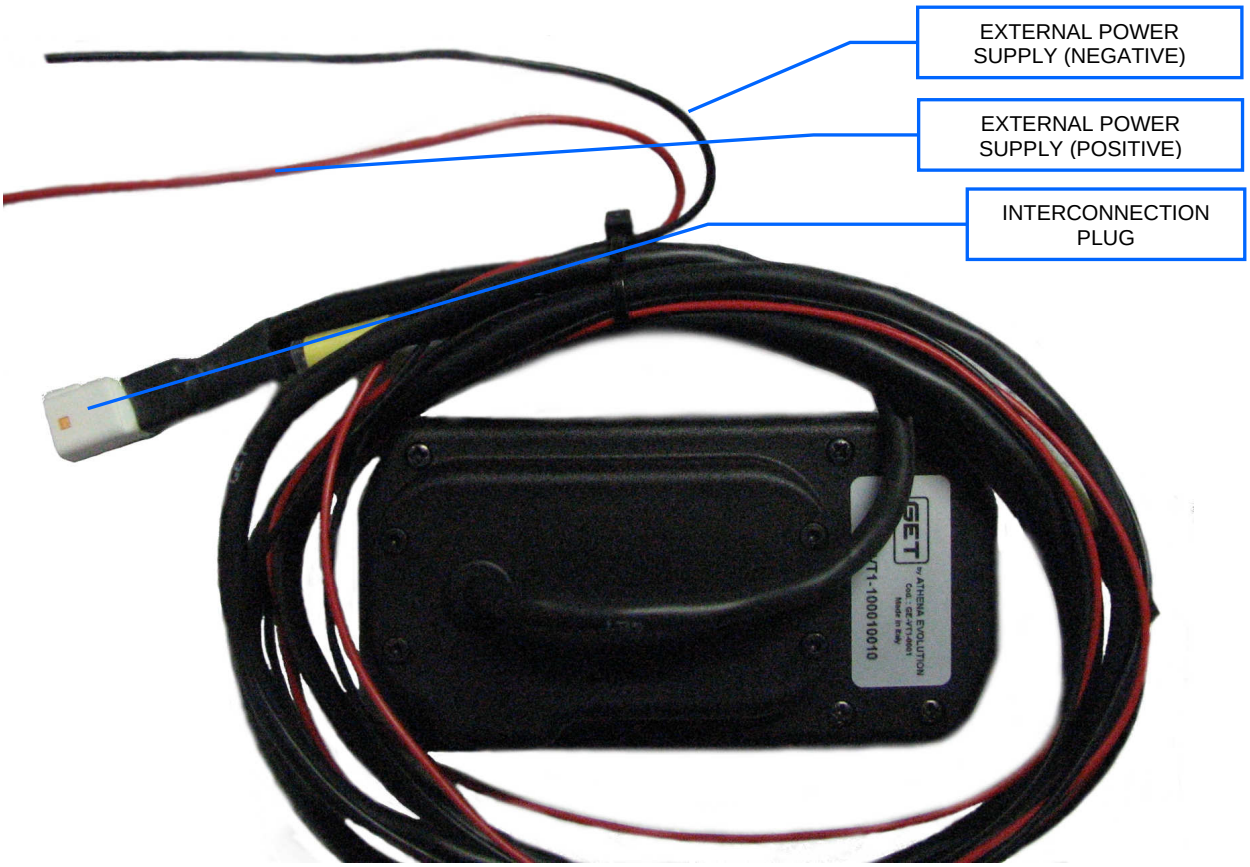
8 VT1 CONTROLLS AND SIGNALS





8.1 VT1 BUTTON USE

VT1 buttons have following functions:

- **S** (SET) button: permit to enter menu/submenu and confirm operations
- **ARROW** button: permit to move inside functions and change operations

8.2 SWITCH ON

VT1 self switch on once is connected do a power supply (internal or external).
The switch on sequence will switch on three LEDs, the visualization of initial page (initial splash) and at the end the **MAIN** page visualization. In the MAIN page it is possible to use the product.

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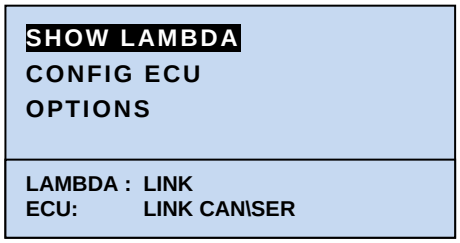
9 VT1 PAGES, MENU AND FUNCTION

Once the **MAIN** page is visualized, using **S** (SET) button is it possible to enter the menu for all functions. This manual will show all instrument's functions: **please be advised that the functions may change due to the connections, installed components and ECU firmware**.

9.1 MAIN PAGE

This is the VT1 **MAIN** page:



The MAIN menu voices are:

- **SHOW LAMBDA**: if selected, this function visualize real time Lambda value from the **GET LC1 EVO** module and some engine parameter (RPM, TPS, engine temp)
- **CONFIG ECU**: if selected, this function can change ECU parameters (TPS, CUTOFF, LIMITER, etc…)
- **OPTIONS**: if selected, this function change **VT1** options (LAMBDA TARGET, LAMBDA UNIT,RESTORE ECU etc…)

The lower part of **MAIN** page show connection status between **VT1** and linked peripherals:

- **LAMBDA**: show the connection status of **LC1 EVO** Lambda module. VT1 can visualize following status:
  NONE: this status show that none **LC1 EVO** is connected to **VT1** or that the connection is not correct.
  LINK : this status show that **LC1 EVO** is connected and recognized by **VT1**
- **ECU**: show the connection status of ECU. **VT1** can visualize following status:
  NONE: this status show that none **ECU** is connected to **VT1** or that the connection is not correct.
  LINK SER : this status show that **ECU** is connected to **VT1** via serial bus.
  LINK CAN\SER : this status show that **ECU** is connected to **VT1** via serial bus and CAN bus.

WARNING: IF COMMUNICATION STATUS IS INCORRECT, "SHOW LAMBDA" AND "CONFIG ECU" MENUS CAN NOT BE AVAILABLE.

The display will show this message if Lambda connection is not available and the user try to enter the **SHOW LAMBDA** menu. If **LC1 EVO** is connected, please check connections.

The display will show this message if it is present a communication error between **ECU** and **VT1** and the user try to enter the **CONFIG ECU** menu. Please repeat this operation further or check connections.

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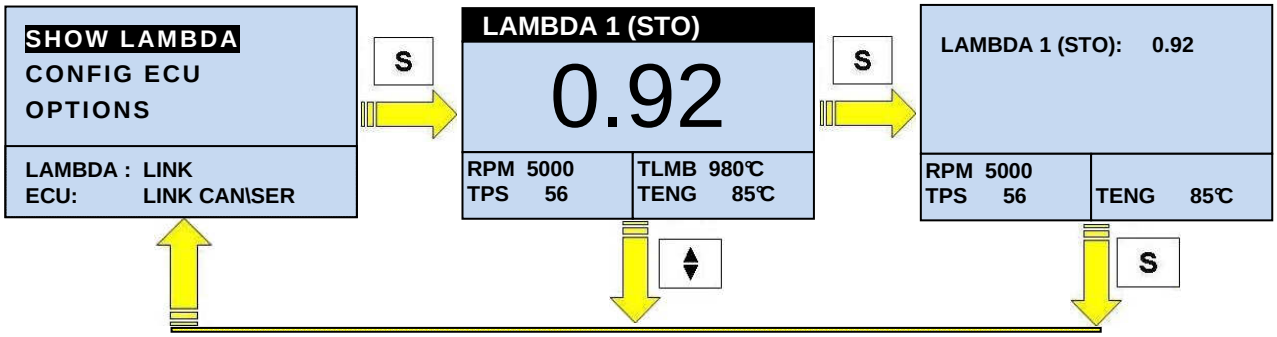
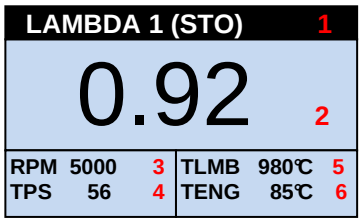
9.2 SHOW LAMBDA MENU

SHOW LAMBDA menu visualize **LC1 EVO** module if connected to the system.
Use **ARROW** button to move the cursor to the **SHOW LAMBDA** voice, press **S** (SET) button:



Inside the page you will see:

- **1 –** number of the sensor monitored by **VT1** and Lambda value measurement unit (STO or AFR)
- **2 –** Lambda value
- **3 – RPM** : engine speed (revolution per minute)
- **4 – TPS** : throttle percentage
- **5 – TLMB** : exaust gas temperature
- **6 – TENG** : engine temperature



Pushing again **S** (SET) button you will visualize the resuming page of all linked Lambda sensors (this is useful if multiple sensor are installed). In this page all values are shown real time. **TLMB** value is not visualized.

NOTE: VT1 can show 4 Lambda sensors (connected to LC1 EVO). The example in this manual is referred to a single sensor setup.

To get back to **MAIN** page, from resume page, you have to press **S** (SET) button.
You can get back directly to **MAIN** page, from all pages, using **ARROW** button.

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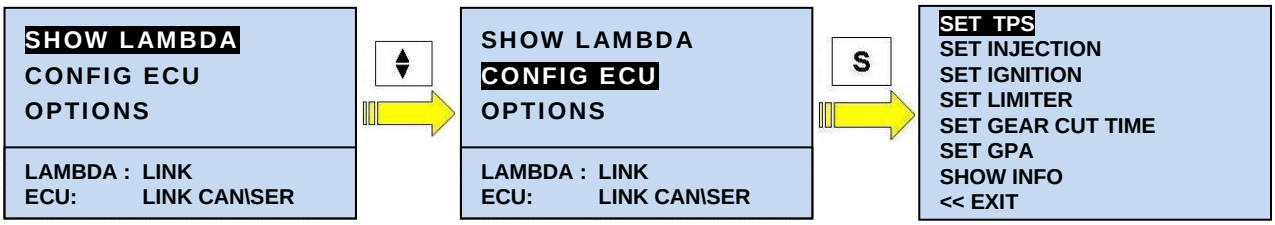
9.3 CONFIG ECU MENU

In the **CONFIG ECU** menu the user can modify some ECU parameter.
Use **ARROW** button to move the cursor to the **CONFIG ECU** voice, press **S** (SET) button:



You can scroll menu using **ARROW** button and confirm with **S** (SET) button.
These are all options:

- **SET TPS:** you can set butterfly valve minimum opening value (TPS MIN) and maximum opening value (TPS MAX). Values will be used to calibrate sensor and during engine operation.
- **SET INJECTION:** you can rise/reduce fuel quantity during all engine operation range.
- **SET INGNITION:** you can rise/reduce timing advance during all engine operation range.
- **SET LIMITER:** you can rise (up to 500 rpm) limiter level define in original ECU map.
- **SET GEAR CUT TIME:** you can rise/reduce cutoff time for electronic gearshift [1]
- **SET GPA:** you can adjust **GPA** (Get Power Assistance) [2]
- **SHOW INFO:** you can visualize some information stored in ECU
- **<<EXIT:** you jump to **MAIN** page of **VT1**

For further information on options described above please read chapter **10.0**.

[1] only with sensor correctly installed and activated in map.
[2] only if function is enabled in ECU

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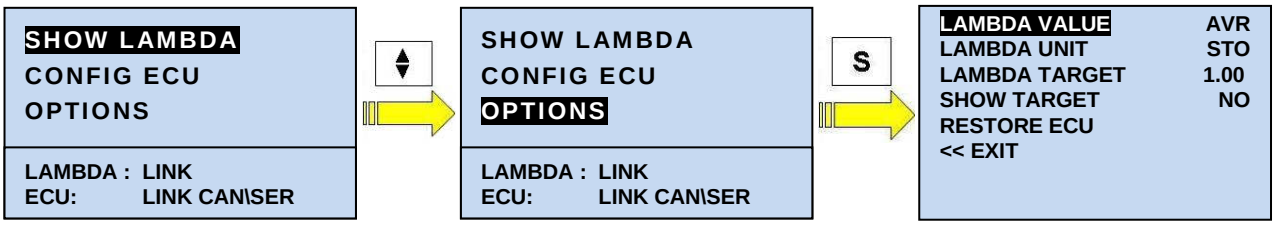
9.4 OPTIONS MENU

In **OPTIONS** menu you can modify some **VT1** parameters.
Use **ARROW** button to move the cursor to the **OPTION** voice, press **S** (SET) button:



These are all options:

- **LAMBDA VALUE:** you can set the the Lambda value used in **SHOW LAMBDA** pages. There are two options:
  AVR (factory preset)**:** Lambda value "filtered" by **LC1 EVO**. Lambda value is calculated to avoid "peaks" during visualization
  RAW : instant Lambda value (not filtered during visualization)

- **LAMBDA UNIT:** you can chose the Lambda value measurement unit in **SHOW LAMBDA** menu. There are two options:
  STO (factory preset)**: VT1** visualize data from the probe as residual oxygen after combustion.
  AFR: VT1 visualize data from probe as air-to-fuel ratio. (Note: AFR = STO x 14.7)

- **LAMBDA TARGET:** you can set the reference Lambda value for Lambda sensor aided mixing.

- **SHOW TARGET:** you can visualize **LAMBDA TARGET** value in **SHOW LAMBDA** menu for mixing check.

- **RESTORE ECU:** you can restore factory preset to fuel and timing changes done with **VT1**.

- **<<EXIT:** you can get back to **MAIN** page of **VT1**.

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10 HOW TO ....

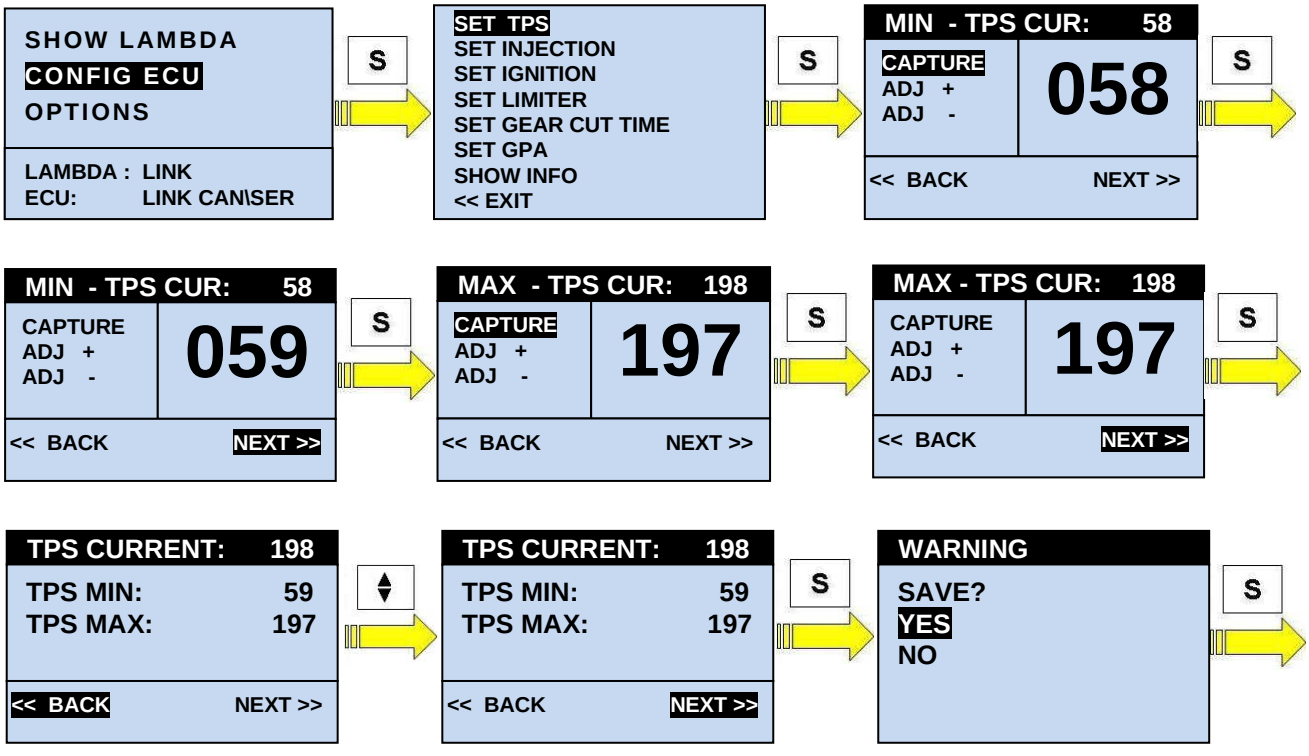
Following chapters will explain you ho to use **VT1**.
Unless otherwise indicated **VT1** should be switch on and properly connected to EC1 and **LC1 EVO**.
The reference page is **MAIN** page (visualized after the system is switched on).

10.1 TPS CALIBRATION

To set correctly TPS (**T**hrottle **P**osition **S**ensor) it is necessary to select **SET TPS** function inside **CONFIG ECU** menu.
The calibration has to be done with completely closed butterfly (TPS MIN) and with completely open butterfly (TPS MAX).
Modification have effect only once stored in ECU.

Please proceed as follow:

- Enter the calibration page for completely closed butterfly (TPS MIN): the display show **MIN** in the top left part
- Close completely the throttle (and maintain the position)
- Press **S** (SET) button once **CAPTURE** is visualized: **VT1** will show the digital value red by the sensor increased by one unit.
- **NEXT >>** is visualized: push **S** (SET) button
- **VT1** enter the wide open throttle calibration (TPS MAX): the display show **MAX** in the top left part
- Open completely the throttle (and maintain the position)
- Press **S** (SET) button once **CAPTURE** is visualized: **VT1** will show the digital value red by the sensor decreased by one unit.
- **NEXT >>** is visualized: push **S** (SET) button
- Release the throttle
- **VT1** resume the completed calibration: move selection from **<<BACK** to **NEXT>>** with **ARROW** button and press **S** (SET)
- **VT1** visualize all set values: if you want to store calibration push **S** (SET) button once **YES** voice is selected.



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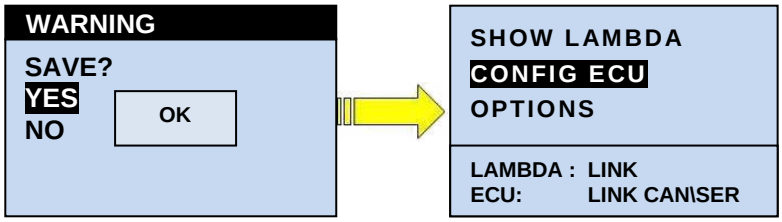
- Please wait a few seconds in order to store the parameters in the ECU: once the procedure is completed display will show **OK** and the central green led will flash.
- At the end of operations VT1 get back to **MAIN** page.



The procedure descrive above is the standard . In some occasion the user may need to get back to previous menu or change slightly the calibration.
Some option are available:

- **ADJ +** : you can increase manually TPS MIN or TPS MAX value once selected with **S** (SET) button
- **ADJ -** : you can decrease manually TPS MIN or TPS MAX value once selected with **S** (SET) button
- **<< BACK** : you can get back to the previous page once selected with **S** (SET) button (useful if you want to come back at the previus page or to exit without saving data)
- **NO** : you can not save calibration if you press **S** (SET) button

Available adjustments may depend upon the firmware of ECU. Please check chapter **11.1**.

WARNING: THIS OPERATION IS DONE, UNLESS SPECIFIC OCCASION, WITH ENGINE NOT RUNNING.
IN BATTERY LESS VEHICLE IT IS RECCOMENDED USE EXTERNAL POWER SUPPLY: IT IS STRICTLY RECOMMENDED TO DISCONNECT THE FUEL PUMP.
IF THE INJECTOR IS OPEN, THE CILINDER COULD BE FILLED WITH FUEL.

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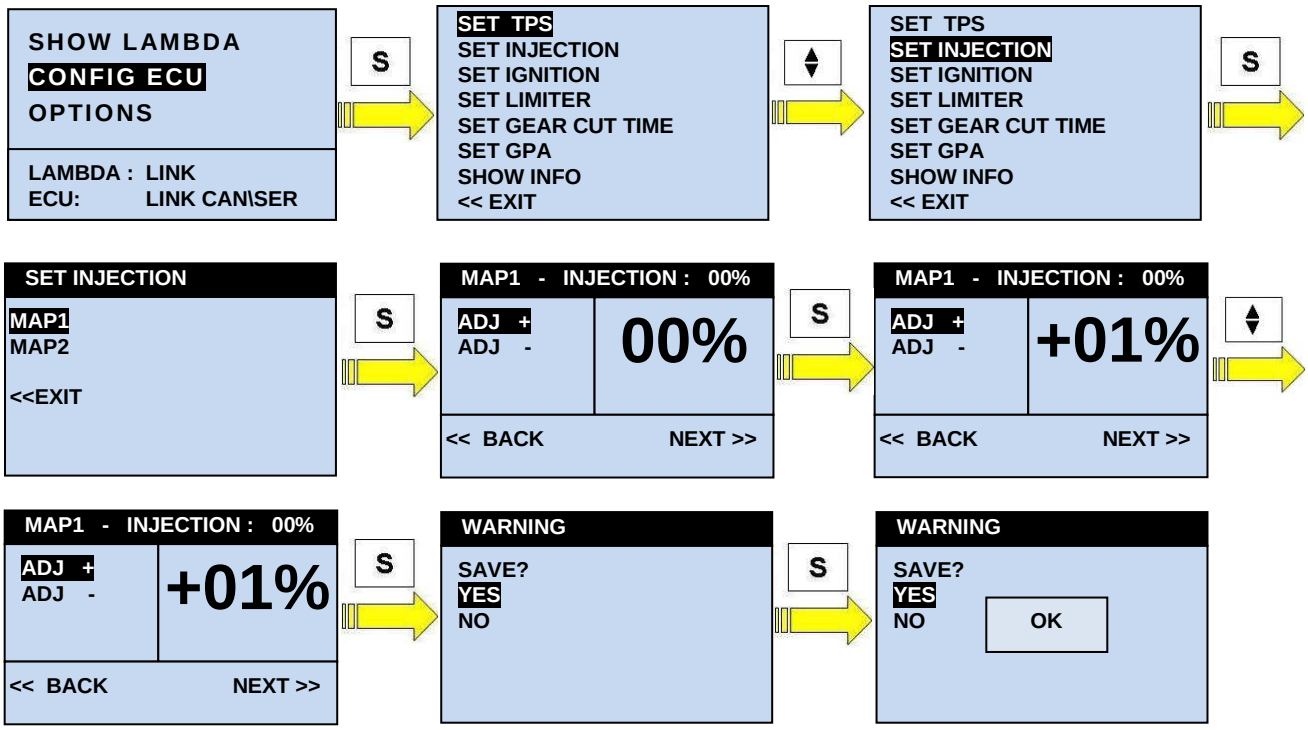
10.2 INJECTED FUEL QUANTITY ADJUSTMENT

The fuel quantity injected in all engine range could be modified using **SET INJECTION** function inside **CONFIG ECU** menu.
With this function the user can add or remove fuel (INJ_OFFSET) changing injection open time.
This correction can be done also with engine running.
SET INJECTION sets independently two maps in ECU (MAP1 and MAP2).
Modification have effect only once stored in ECU.

Please proceed as follow:

- Enter **SET INJECTION** page.
- Select the map you want to modify (example **MAP1**) pushing **S** (SET) button.
- Push **S** (SET) when **ADJ+** is visualized to increase fuel quantity: each time **S** (SET) is pushed percentage is increased by 1%. To decrease fuel quantity move to **ADJ-** pushing **ARROW** and push **S** (SET).
- Once completed all modifications, push **ARROW** to select **NEXT >>**.
- Push **S** (SET): **VT1** display the screen with all corrections. If you wish to save the configuration push **S** (SET) once **YES** is selected.
- Please wait a few seconds in order to store the parameters in the ECU: once the procedure is completed display will show **OK** and the central green led will flash.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< BACK** : you can get back to the previous page once selected with **S** (SET) button (useful if you want to come back at the previus page or to exit without saving data)
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

WARNING: INJECTION OFFSET PREVIOUSLY SET WILL BE RED BY VT1

Available adjustments may depend upon the firmware of ECU. Please check chapter **11.1**.

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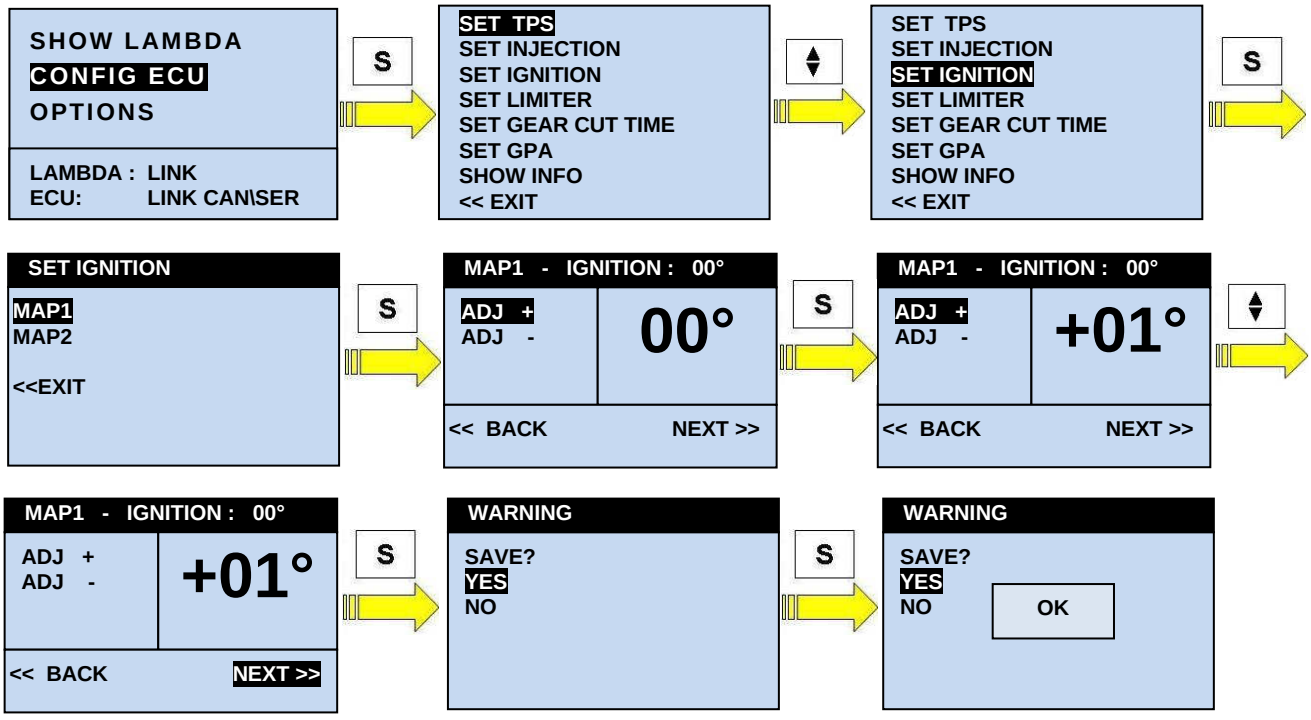
10.3 TIMING ADVANCE ADJUSTMENT

You can change the timing advance with **SET IGNITION** function, inside **CONFIG ECU** menu.
This function will change the timing advance (SPARK_OFFSET) through all engine range.
This correction can be done also with engine running.
SET IGNITION can manage independently two ECU maps (MAP1 and MAP2).
Modification have effect only once stored in ECU.

Please proceed as follow:

- Enter **SET IGNITION** page
- Select the map you want to modify (example **MAP1**) pushing **S** (SET) button.
- Push **S** (SET) when **ADJ+** is visualized to increase advance: each time **S** (SET) is pushed angle is increased by 1 degree. To decrease advance move to **ADJ-** pushing **ARROW** and push **S** (SET).
- Once completed all modifications, push **ARROW** to select **NEXT >>**.
- Push **S** (SET): **VT1** display the screen with all corrections. If you wish to save the configuration push **S** (SET) once **YES** is selected.
- Please wait a few seconds in order to store the parameters in the ECU: once the procedure is completed display will show **OK** and the central green led will flash.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< BACK** : you can get back to the previous page once selected with **S** (SET) button (useful if you want to come back at the previus page or to exit without saving data)
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

WARNING: INGNITION OFFSET PREVIOUSLY SET WILL BE RED BY VT1. MINIMUM REGULATION IS ±1°.

Available adjustments may depend upon the firmware of ECU. Please check chapter **11.1**.

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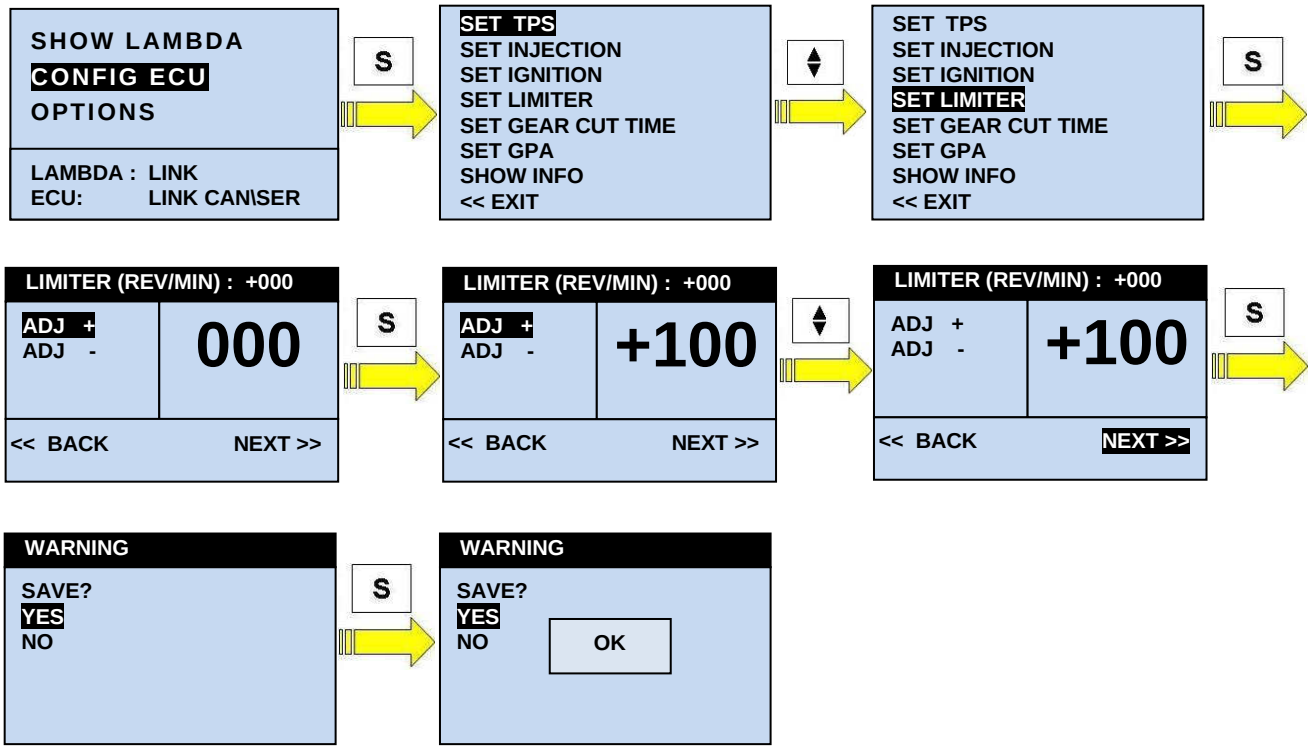
10.4 RPM LIMITER ADJUSTMENT

RPM limiter can be modified using **SET LIMITER** function in **CONFIG ECU** menu.
The modification of this parameter (LIMITER ADJ) can be done also with the engine running.
Values can go from 0 up to + 500 rpm, with 100 rpm steps, taking the original ECU rpm limiter value as a reference.
Modification have effect only once stored in ECU.

Please proceed as follow:

- Enter the **SET LIMITER** page
- Push **S** (SET) when **ADJ+** is visualized to increase rpm limiter value: each time **S** (SET) is pushed the value is increased by 100 rpm. To decrease rpm limiter value move to **ADJ-** pushing **ARROW** and push **S** (SET).
- Once completed all modifications, push **ARROW** to select **NEXT >>**.
- Push **S** (SET): **VT1** display the screen with all corrections. If you wish to save the configuration push **S** (SET) once **YES** is selected.
- Please wait a few seconds in order to store the parameters in the ECU: once the procedure is completed display will show **OK** and the central green led will flash.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< BACK** : you can get back to the previous page once selected with **S** (SET) button (useful if you want to come back at the previus page or to exit without saving data)
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

WARNING: RPM LIMITER OFFSET PREVIOUSLY SET WILL BE RED BY VT1. IF THE RPM LIMITER VALUE IS SET TO 0 IN THE ORIGINAL ECU MAP, IT IS NOT POSSIBLE TO SET IT LOWER.

Available adjustments may depend upon the firmware of ECU. Please check chapter **11.1**.

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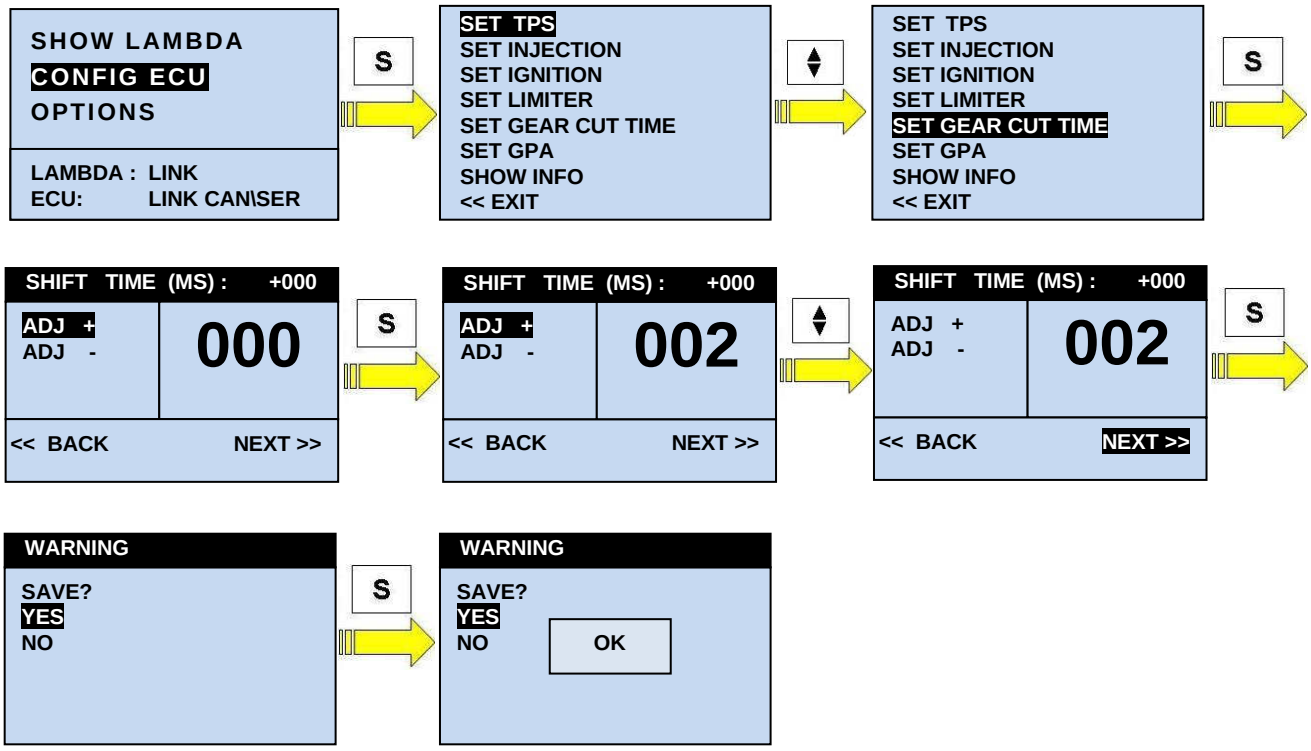
10.5 CUTOFF ADJUSTMENT

It is possible to change the cutoff time for the electronic gearshift (GEAR CUT TIME) using **SET GEAR CUT TIME** function in **CONFIG ECU** menu.
This correction can be done also with engine running.
Values can be changed from 0 to 500 ms (milliseconds) with 2 ms steps.
Modification have effect only once stored in ECU.

Please proceed as follow:

- Enter **SET GEAR CUT TIME** page
- Push **S** (SET) when **ADJ+** is visualized to increase cutoff time: each time **S** (SET) is pushed time is increased by 2 ms. To decrease cutoff time move to **ADJ-** pushing **ARROW** and push **S** (SET).
- Once completed all modifications, push **ARROW** to select **NEXT >>**.
- Push **S** (SET): **VT1** display the screen with all corrections. If you wish to save the configuration push **S** (SET) once **YES** is selected.
- Please wait a few seconds in order to store the parameters in the ECU: once the procedure is completed display will show **OK** and the central green led will flash.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< BACK** : you can get back to the previous page once selected with **S** (SET) button (useful if you want to come back at the previus page or to exit without saving data)
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

WARNING: ELECTRONIC GEARSHIFT IS IMPLEMENTED ONLY IF THE SENSOR IS CONNECTED TO ECU AND THE MAP CONTAIN THE FUNCTION.

Available adjustments may depend upon the firmware of ECU. Please check chapter **11.1**.

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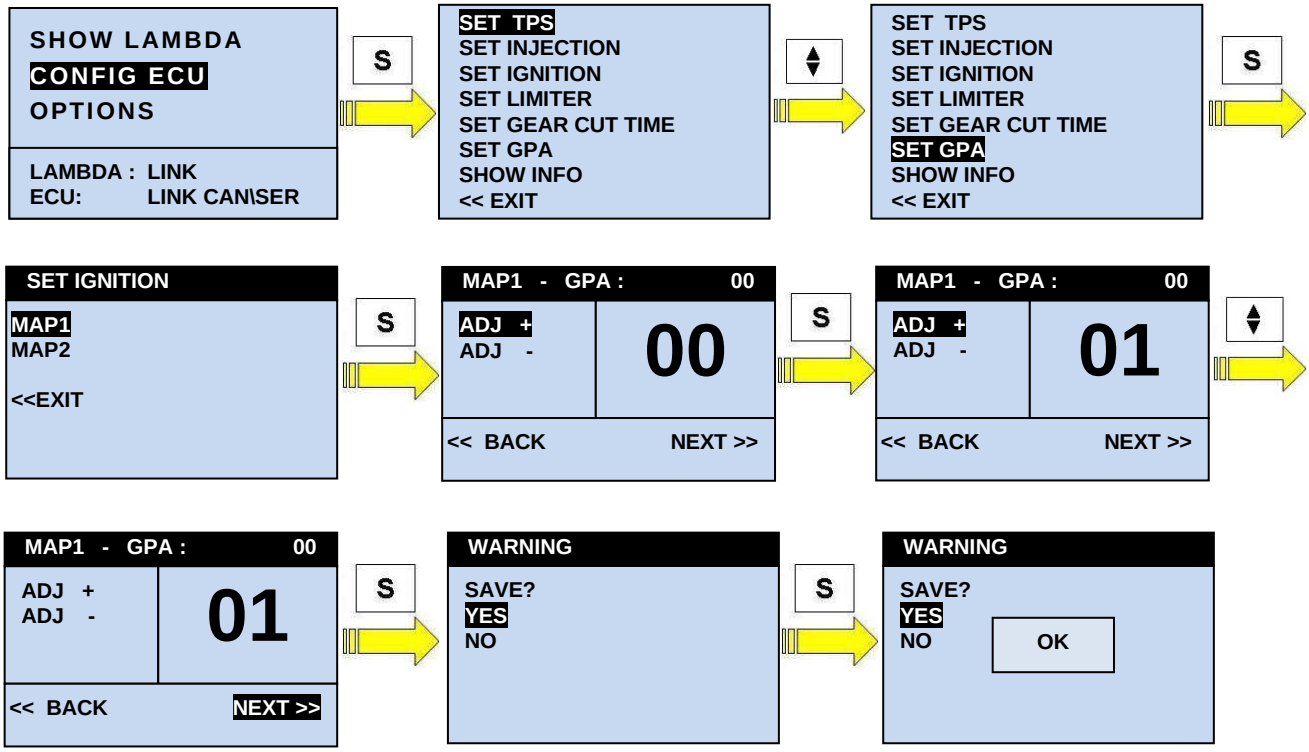
10.6 GPA (Get Power Assistance) ADJUSTMENT

Using **SET GPA** inside **CONFIG ECU** menu it is possible to modify **GPA** (**G**et **P**ower **A**ssistance) settings. This correction can be done also with engine running.
Values can be changed from 0 (system is off) to 10 (top of the range). **SET GPA** can manage two different maps (**MAP1** and **MAP2**).
Modification have effect only once stored in ECU.

Please proceed as follow:

- Enter **SET GPA** page
- Select the map you want to modify (example **MAP1**) pushing **S** (SET) button.
- Push **S** (SET) when **ADJ+** is visualized to increase intervention: each time **S** (SET) is pushed intervention is increased by 1 unit. To decrease intervention move to **ADJ-** pushing **ARROW** and push **S** (SET).
- Once completed all modifications, push **ARROW** to select **NEXT >>**.
- Push **S** (SET): **VT1** display the screen with all corrections. If you wish to save the configuration push **S** (SET) once **YES** is selected.
- Please wait a few seconds in order to store the parameters in the ECU: once the procedure is completed display will show **OK** and the central green led will flash.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< BACK** : you can get back to the previous page once selected with **S** (SET) button (useful if you want to come back at the previus page or to exit without saving data)
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

WARNING: GPA FUNCTION IS ACTIVATED ONLY IF IT IS IMPLEMENTED IN ECU.

Available adjustments may depend upon the firmware of ECU. Please check chapter **11.1**.

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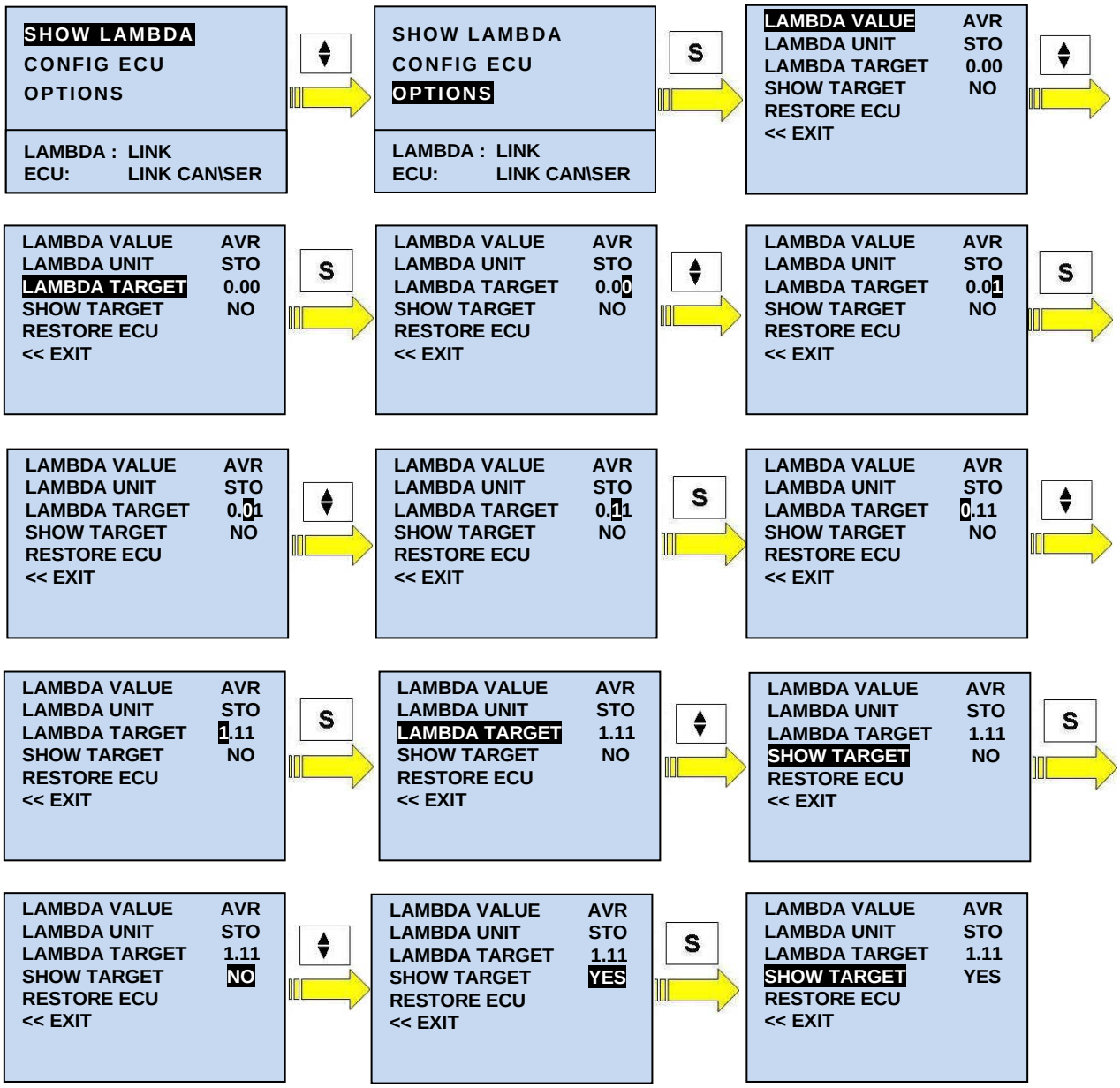
10.7 LAMBDA SENSOR AIDED MIXING CHECK

VT1 can adjust ideal mixing (**LAMBDA TARGET**).
This parameter setting will check the fixed value and a real time value (using **LC1** Lambda sensor).

Please proceed as follow:

- Select **OPTIONS** in **MAIN** page pushing **S** (SET) button.
- Push **ARROW** to move to **LAMBDA TARGET** and confirm with **S** (SET) button
- Select desired value: modify values with **ARROW** and confirm with **S** (SET) button
- Push **ARROW** to move to **SHOW TARGET** and push **S** (SET): the selection will move to the option value
- Change the option from **NO** to **YES** pushing **ARROW** and confirm with **S** (SET)
- Once completed all modifications, push **ARROW** to select **<<EXIT** and confirm with **S** (SET). **VT1** will be back to **MAIN** page.



WARNING: THE LAMBDA VALUE SHOWN IN THE PAGES ABOVE IS FOR DISPLAY POURPOSE ONLY.

- From **MAIN** page, select **SHOW LAMBDA** voice pushing **S** (SET)
- In the upper part of the screen the previously set **LAMBDA TARGET** is displayed. In the central part is displayed the real time value:

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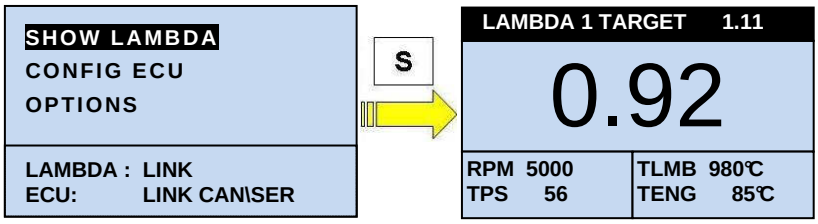

- Mixing status is signalled via three LEDs: if Lambda sensor value is equal to **LAMBDA TARGET** ± 0.01 (**STO** visualization) central LED (LED2) is on. If mixing is lean the upper LED (LED1) is on (fix light or blinking). If mixing is rich the lower LED is on.
  The following table present all LED limits:

CONDITION	LED	MIXING
LS > LT+0.05	LED 1 blinking	Lean
LT+0.01 < LS > LT+0.05	LED 1 fix	Lean
LT-0.01 < LS > LT+0.01	LED 2 fix	Optimum
LT-0.05 < LS > LT-0.01	LED 3 fix	Rich
LS < LT-0.05	LED 3 blinking	Rich

LT = **LAMBDA TARGET** value
LS = real time **LAMBDA** value read from sensor

WARNING: MIXING VISUALIZATION – LEAN OR RICH – DISPLAYED VIA THE VT1 DEPEND EXCLUSIVELY FROM **LAMBDA TARGET** SET BY THE USER.
A WRONG USE OF THIS FUNCTION COULD CAUSE PROBLEMS TO PEOPLE AND/OR OBJECTS. **GET DISCLAIMS ALL RESPONSIBILITY FOR INCORRECT USE OF FUNCTION PROVIDED BY THE INSTRUMENT**

Some users want to visualize Lambda value expressed as air/fuel ratio: the example is referred to residual oxygen after combustion. **VT1** permit to chose the preferred format, changing **LAMBDA UNIT** parameter (chapter **9.4**).

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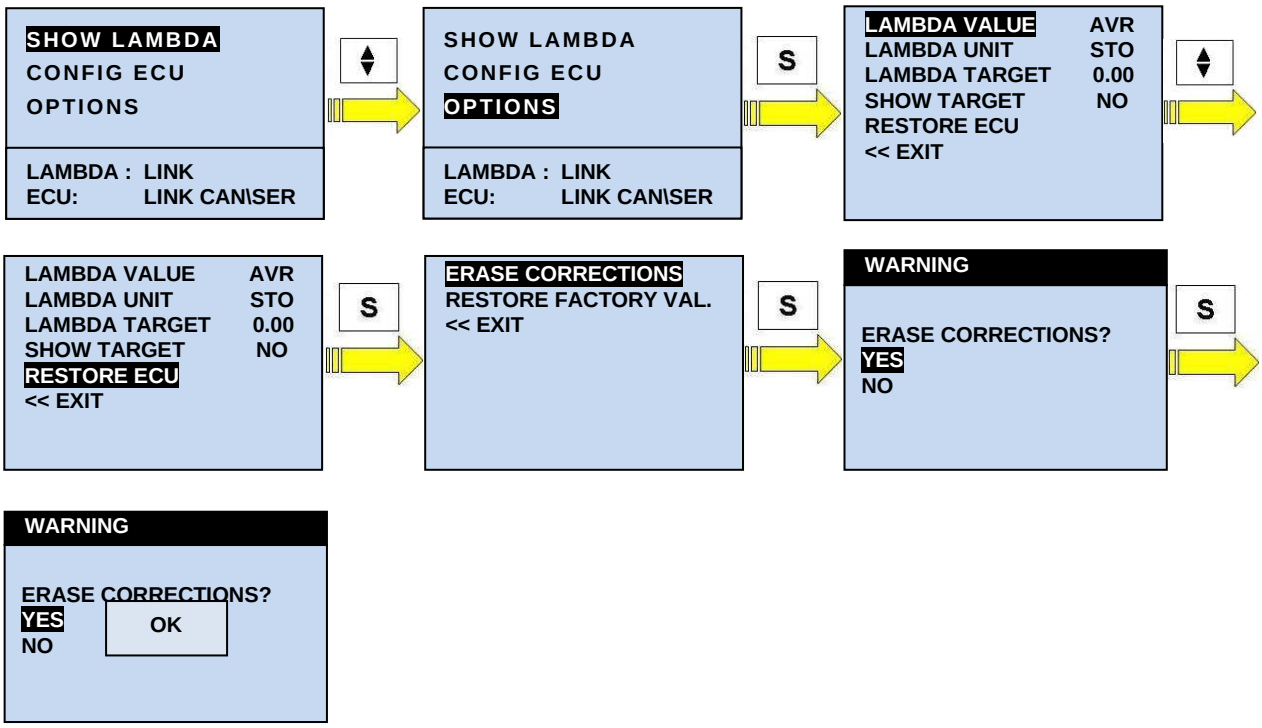
10.8 ORIGINAL ECU VALUES RESTORE

VT1 can restore all original ECU setting (erasing all **VT1** modifications) or modification to timing and injection.

To restore timing and injection parameters please proceed as follow:

- Select **OPTIONS** in **MAIN** page pushing **S** (SET)
- Push **ARROW** moving to **RESTORE ECU** option: confirm with **S** (SET)
- Select **ERASE CORRECTIONS** (with **ARROW**) and push **S** (SET)
- **VT1** asks for confirmation. If you need to erase modification to timing and injection press **S** (SET) once **YES** is selected.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< EXIT** : you can get back to the MAIN page with no modifications.
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

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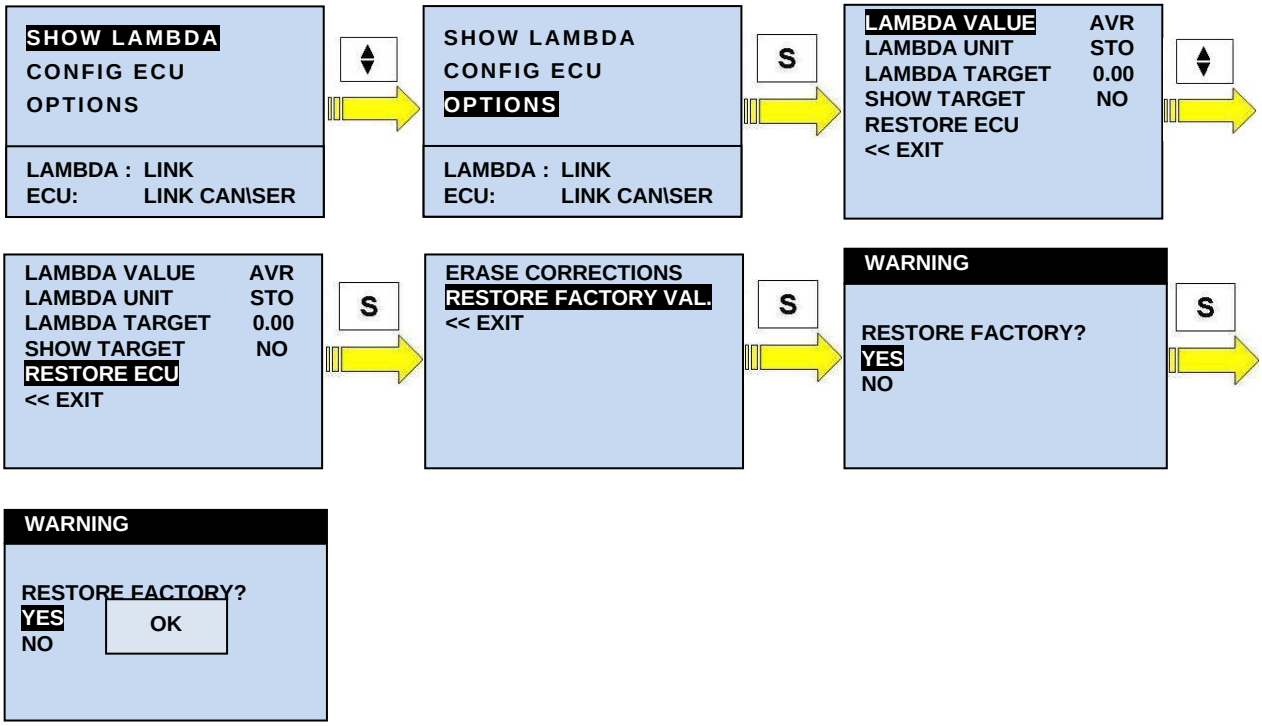
To restore completely ECU (erasing all VT1 variations) please proceed as follow:

- Select **OPTIONS** in **MAIN** page pushing **S** (SET)
- Push **ARROW** moving to **RESTORE ECU** option: confirm with **S** (SET)
- Select **RESTORE FACTORY VAL.** (with **ARROW**) and push **S** (SET)
- **VT1** asks for confirmation. If you need to erase modification to timing and injection press **S** (SET) once **YES** is selected.
- At the end of operations VT1 get back to **MAIN** page.



This is the meaning of some other functions:

- **<< EXIT** : you can get back to the MAIN page with no modifications.
- **NO** : you can avoid to save the configuration once selected with **S** (SET) button

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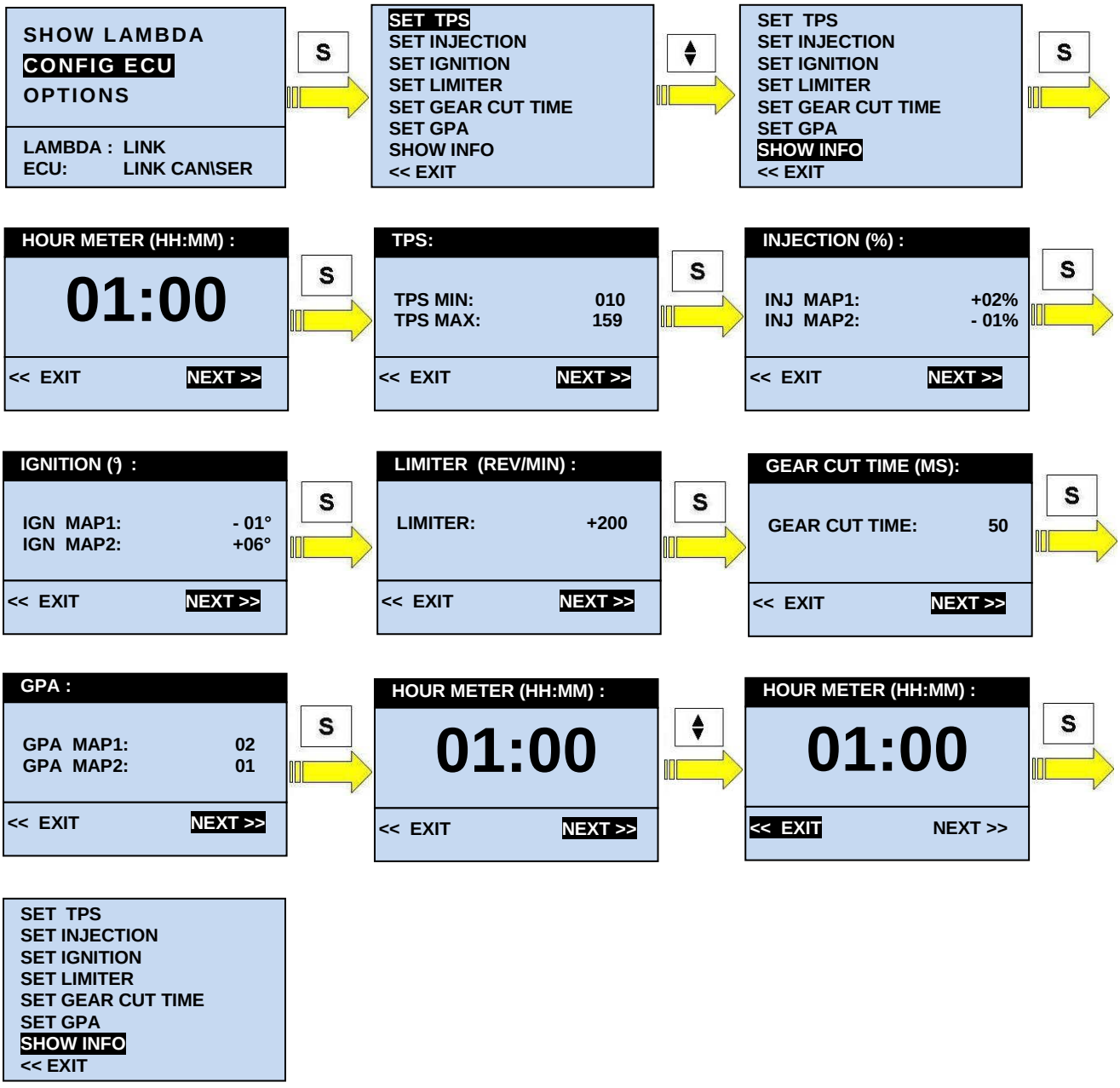
10.9 ECU PARAMETER VISUALIZATION

VT1 can visualize some ECU parameters.

To proceed with visualization follow instruction above:

- Select **CONFIG ECU** in **MAIN** page pushing **S** (SET) button.
- Move to **SHOW INFO** option pushing **ARROW**: confirm pushing **S** (SET)
- Move the cursor onto **NEXT>>** option and push **S** (SET): some resuming pages of ECU parameters will scroll cyclically
- To get back to **CONFIG ECU** move with **ARROW** onto **<<BACK** (whatever the page is) and push **S** (SET).
- Select **<<EXIT** to get back to **MAIN** page



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11 ECU COMPATIBILITY LIST

The following table show compatibility between **VT1** and ECU:

ECU	COMPATIBILITY
GP1 EVO	Yes

11.1 ADJUSTMENT RANGE

Available adjustments may depend upon the firmware of ECU. The following table show all functions:

FUNCTION	ECU	
	GP1 EVO firmware 35 (or previous)	GP1 EVO firmware 36 (o later)
TPS calibration	YES	YES
Mixing calibration	YES from -10% to + 15%	YES from -10% to + 30%
Timing calibration	YES from -5°to + 5°	YES from -3 0°to + 5°
Rpm limiter calibration	YES from 0 rpm to + 500 rpm	YES from 0 rpm to + 500 rpm
GEAR CUT TIME calibration	NO[1]	YES from 0 ms to 500 ms
GPA calibration	NO[1]	YES [2]

1 only with sensor correctly installed and activated in map.

2 only if function is enabled in ECU

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12 FIRMWARE UPDATE

It is possible update the **VT1** firmware via pc and a connection cable.
This is the list of what you need to proceed:

- computer
- the updated firmware must be saved in the computer
- power supply (12 VDC - 18VDC) for PL00130000
- PL00130000 serial cable (same as ECU GP1 EVO)
- USB-serial connection (if PC doesn't have a physical serial port) approved by **GET**

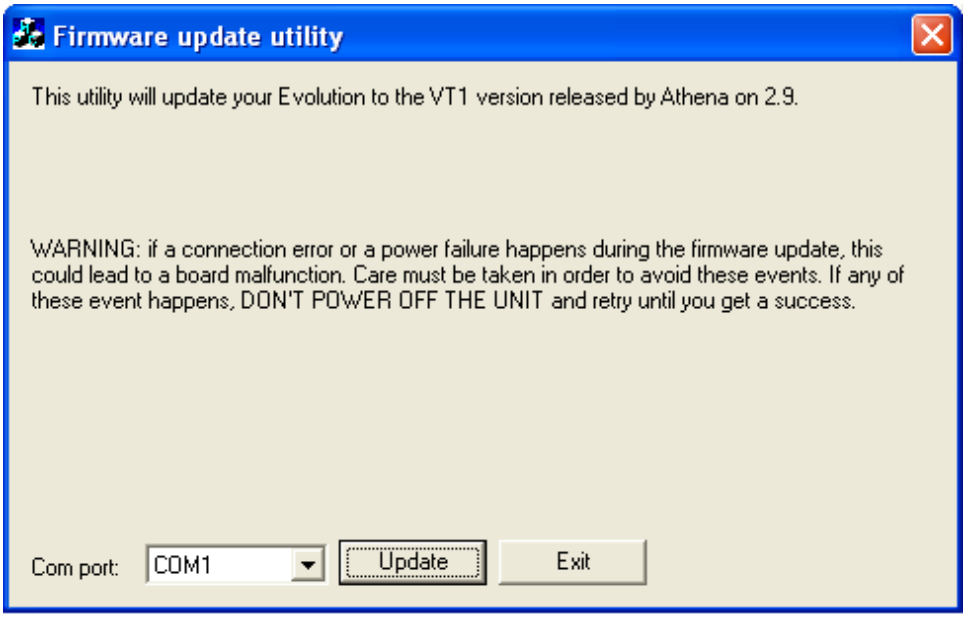
To update please proceed as follow:

- Isolate red and black wires for external power supply for **VT1**
- Connect cable PL00130000 to computer through serial port (or to USB-serial interface)
- Enable the "program mode" plugging connector onto the PL00130000 cable

- Connect the PL00130000 to an external power supply (12 VDC - 18VDC)
- Connect **VT1** to PL00130000 through white 8 pins connector and verify that it is correctly switched on
- Left click on "fwupdate.exe" icon to start firmware update.

fwupdate.exe

- Select the serial communication port (**COM Port**) where the **VT1** is connected


Firmware update utility
This utility will update your Evolution to the VT1 version released by Athena on 2.9.
WARNING: if a connection error or a power failure happens during the firmware update, this could lead to a board malfunction. Care must be taken in order to avoid these events. If any of these event happens, DON'T POWER OFF THE UNIT and retry until you get a success.
Com port:
COM1
Update
Exit

NOTE: if the cable is connected to a physical serial port, usually it is necessary to select COM1. if a USB-serial adaptor is used, it is necessary check the proper address through Windows.

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- Press UPDATE button and confirm: wait until the end of the procedure
  WARNING: DO NOT DISCONNET TEH CABLE UNTIL THE VT1 IS REBOOTED

- At the end of procedure disconnect the cable

	WARNING: IF THIS PROCEDURE IS NOT FOLLOWED EXACTLY AND/OR AN INCORRECT POWER SUPPLY MAY DAMAGE VT1: IN THIS CASE GET TECHNICAL DEPARTMENT MAY NEED TO OPERATE THE UNIT.

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13 TROUBLESHOOTING

Errors displayed by **VT1** are limited:

ERROR MESSAGE/ UNUSUAL FUNCTIONING	CAUSE	SOLUTION
VT1 can not swich on	No power, wrong connection	Verify power supply and/or connection of VT1 to vehicle
VT1 can not swich on	System stuck	Disconnect and reconnect system to ECU
NO LINK message	There is no CAN connection to **LC1 EVO** module	Install **LC1 EVO** and/or verify connection to vehicle
ERROR message	Wrong serial connection to ECU	Retry the command from VT1 and/or verify connection to vehicle
Wrong Lambda values	Lambda sensor not working	Change Lambda sensor
Missing controll LEDs not working	**SHOW TARGET** is not set	Refer to chapters **10.4** and **10.7**

14 TECHNICAL SPECIFICATION

HARDWARE

- IP64 shock-proof plastic box
- Transreflective FSTN display 128x96 pixel with backlight
- Two onboard buttons for functions
- Three signaling LEDs
- Serial communication port
- High Speed 1Mb/s CAN communication port
- Consumption: 120mA @ 12VDC
- Power supply range: from 6VDC to 18VDC
- Dimensions (lenght X wodth X depth) mm : 108 mm X 55mm X 30 mm
- Weight: 170 g

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NOTES:

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ITALIANO

Direttive 2002/95/CE, 2002/96/CE e 2003/108/CE del Parlamento Europeo relative ai rifiuti di Apparecchiature Elettriche ed Elettroniche

Smaltimento dei rifiuti elettrici ed elettronici (applicabile nell'Unione Europea e negli altri paesi europei con servizio di raccolta differenziata).

Il simbolo del cassonetto barrato presente sul prodotto o sulla sua confezione indica che il prodotto non deve essere trattato come rifiuto domestico, bensì raccolto separatamente ed essere consegnato ad un centro di raccolta autorizzato per il riciclo dei rifiuti elettrici ed elettronici (oppure reso al rivenditore nel momento dell'acquisto di un nuovo prodotto di tipo equivalente, in ragione di uno a uno). Provvedendo a che il prodotto venga smaltito in modo ambientalmente compatibile, si evita un potenziale impatto negativo sull'ambiente e per la salute umana, favorendo il reimpiego e/o riciclo dei materiali di cui è composta l'apparecchiatura.

Lo smaltimento abusivo del prodotto da parte dell'utente comporta l'applicazione delle sanzioni amministrative previste dalla normativa vigente.

Per adempiere correttamente alla normativa, i produttori partecipano a "sistemi collettivi" che hanno il compito di organizzare e gestire sistemi di raccolta dei RAEE provenienti dai nuclei domestici.

Per maggiori informazioni, contattare l'ufficio preposto nella Vostra città, il servizio per lo smaltimento dei rifiuti domestici o il negozio in cui avete acquistato il prodotto.

ENGLISH

Directive 2002/95/EC, 2002/96/EC and 2003/108/CE of the European Parliament on waste electrical and electronic equipment (WEEE)

Disposal of old Electrical & Electronic Equipment (applicable throughout the European Union and other European countries with separate collection programs).

The symbol of crossed out wheeled bin, found on the product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point (or the recycling of electrical and electronic equipment).

By ensuring that product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources.

For more detailed information about the recycling of this product, please contact your local city office, household waste disposal service or the retail store where you purchased the product.

FRANÇAIS

Directive 2002/95/CE, 2002/96/CE et 2003/108/CE du Parlement européen relative aux déchets d'équipements électriques et électroniques (DEEE)

Disposition concernant les anciens équipements électriques et électroniques (applicable dans l'Union Européenne et dans d'autres pays européens avec des systèmes de collecte séparés).

Ce symbole sur le produit ou sur son emballage indique que ce produit ne sera pas traité comme perte ménagère. Au lieu de cela il sera remis au point de collecte dédié pour le recyclage de l'équipement électrique et électronique. En s'assurant que ce produit est trié et jeté correctement, vous contribuerez a empêcher de potentielles conséquences négatives pour l'environnement et la santé humaine, qui pourraient autrement être provoquées par la manutention de rebut inadéquate de ce produit.

La réutilisation des matériaux aidera à conserver les ressources naturelles.

Pour des informations plus détaillé sur la réutilisation de ce produit, vous pouvez contacter votre mairie, la société de collecte et tri des rebuts ménagers ou le magasin où vous avez acheté le produit.

DEUTSCH

Richtlinie 2002/95/EG, 2002/96/EG, 2003/108/EG des Europäischen Parlaments über Elektro- und Elektronik-Altgeräte - Gemeinsame Erklärung

Entsorgung von alten Elektro- und Elektronikgeraten (gültig in dar Europäischen Union und anderen europäischen Ländern mit separatem Sammelsystem).

Dieses Symbol auf dem Produkt oder auf der Verpackung bedeutet, dass dieses Produkt nicht wie Hausmüll behandelt werden darf. Stattdessen soll dieses Produkt zu dem geeigneten Entsorgungspunkt zum Recyceln von Elektro- und Elektronikgeraten gebracht werden.

Wird das Produkt korrekt entsorgt, helfen Sie mit, negativen Umwelteinflussen und Gesundheitsschàden vorzubeugen, die durch unsachgemäße Entsorgung verursacht werden könnten. Das Recycling von Material wird unsere Naturressourcen erhalten. Für nähere Informationen über das Recyceln dieses Produktes kontaktieren Sie bitte Ihr lokales Bürgerbüro, Ihren Hausmüll Abholservice oder das Geschäft, in dem Sie dieses Produkt gekauft haben

ESPAÑOL

Directiva 2002/95/CE, 2002/96/CE y 2003/108/CE del Parlamento Europeo sobre residuos de aparatos eléctricos y electrónicos (RAEE)

Legislación referida a la eliminación de residuos de aparatos eléctricos y electrónicos (que se aplica en la Unión Europea y en los otros países europeos con servicio de recogida selectiva).

El símbolo del contenedor de basura tachado presente en el producto o en el embalaje indica que el producto no se puede tratar como residuo doméstico, sino que se debe eliminar por separado y se debe entregar a un centro de recogida autorizado para el reciclaje de los residuos de aparatos eléctricos y electrónicos (o se debe devolver al revendedor en el momento de la compra de un nuevo producto equivalente).

Haciendo que el producto se elimine de una manera compatible con el medio ambiente se evitan las potenciales consecuencias negativas sobre el mismo y sobre la salud del hombre, y se favorece el nuevo uso o el reciclaje de los materiales que componen el aparato.

La eliminación incontrolada del producto por parte del usuario implica la aplicación de las sanciones administrativas previstas por la legislación vigente.

Para la aplicación correcta de la legislación, los fabricantes participan en " sistemas colectivos " que tienen la función de organizar y gestionar los sistemas de recogida de los RAEE procedentes núcleos domésticos.

Para mayor información, dirigirse a la oficina de la ciudad de residencia encargada del servicio de eliminación de desechos urbanos o a la tienda donde se adquirió el producto.

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Athena Evolution s.r.l.
Via delle Albere 8
36045 Alonte (VI) Italy